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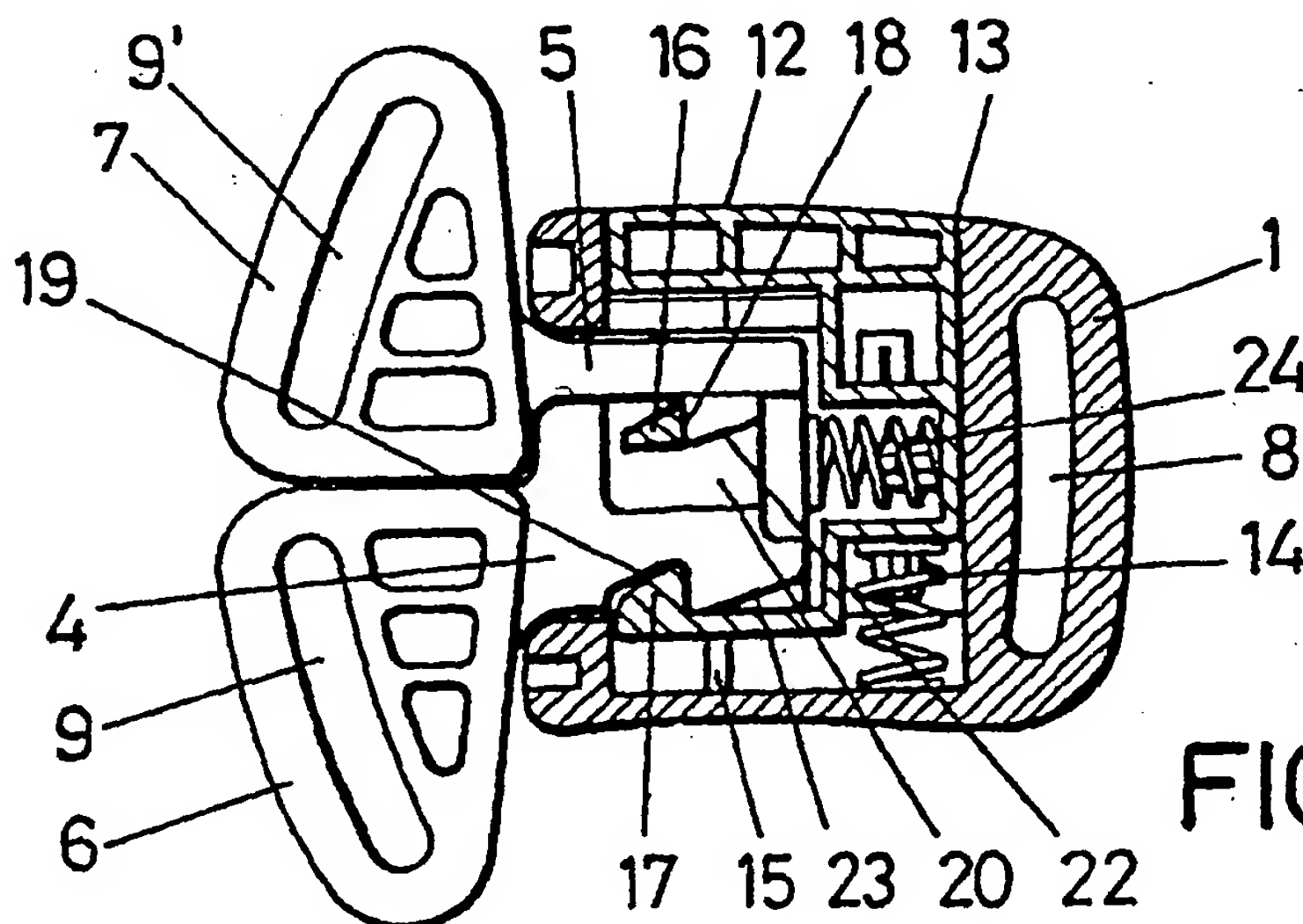
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**(54) SECURITY CLOSING DEVICE FOR CHILDREN SEATS AND THE LIKE**

(57) Comprising, as is conventional, a base (1) and two headers (4) and (5) which couple by matching and insert in the housing defined in base (1), the buckle of the invention is mainly characterised in that button (12), which is mounted on body (1) and by means of which headers (6) and (7) are locked and released, incorporates two retaining teeth (16) and (17), considerably

separated from each other, one placed frontally and the other laterally, which act on respective ledges (18) and (19) of sector (4), which they reach by means of the lateral displacement of said button (12) against the action of a spring (14), when sectors (4) and (5) of the headers are inserted in base (1), and which are released by a manual transverse operation of button (12).



**FIG. 4**

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Descripti n

## OBJECT OF THE INVENTION

[0001] The present invention relates to a buckle for seatbelts normally used for child seats and the like, particularly for chairs which attach to car seats, where safety regulations require such seatbelts to have three straps which are suitably attached to the seat and meet at a common point passing through a buckle, which is also common to the three straps.

[0002] The object of the invention is to obtain a buckle of the aforementioned type which is structurally simple and has an ideal safety performance, so that the mutual attachment between the three parts of which it consists takes place in two points which are considerably separated from each other, as well as defining both a front anchoring point and a side anchoring point.

## BACKGROUND OF THE INVENTION

[0003] Safety buckles of the aforementioned type generally comprise a single-piece base provided on one of its ends with a groove or ring for attaching one of the straps which form the safety belt, and in addition defining a housing for a pair of headers which are in turn provided with corresponding rings for the other two straps, which rings are also provided with sectors which attach to each other by a male-female coupling system and which are jointly inserted in the housing of the base, and which base is provided with means for retaining or locking the former and which are released by pressing a button.

[0004] In general, means for locking the two headers within the base comprise an elastically deformable tab which ends in a saw-tooth shape which in turn acts on one of the housings, so that the locking means are secured by a simple insertion of the headers in the base, while unlocking takes place by operating a button.

[0005] These buckles are further similar in that they comprise a single locking tooth which acts on one point of one of the headers, and most are also similar in that the button acts against the elastic deformation of the locking tab, resulting in a problem which entails two aspects: the locking is not as secure as would be ideal; and the lifetime of the buckle is limited by the risk of the deformable locking tab breaking, due to crystallisation or whichever reason.

## DESCRIPTION OF THE INVENTION

[0006] The safety buckle disclosed by the invention solves the aforementioned problems in a fully satisfactory manner.

[0007] For this purpose, more specifically and according to a basic structure of a conventional safety lock which comprises a base provided with a housing for coupling of the corresponding sector of two complementary

headers, which header sectors housed in the base interlock by means of a matching system, said buckle is characterised by a special configuration of the locking/release button which together with a complementary configuration of the headers allows attachment of these headers, as mentioned before, to take place in two points which are significantly separated from the buckle, with the ensuing safety, and with the button moving against a spring with a useful lifetime which for practical purposes is indefinite.

[0008] More specifically, said button can move transversely also against the spring, and through guides made for such purpose in the base, and is further provided with two locking teeth, one lateral and one frontal and, in addition, in its matching coupling sector, whose width is practically identical to the base housing, incorporates a guide in the form of a bent groove for coupling the frontal tooth and a side notch for coupling the also lateral tooth of the button, and in addition said guide and notch have inclined access ramps to the final locking position of the teeth, causing an automatic transverse displacement of the button in the coupling operation of the headers and the base, acting against the opposition of the aforementioned lateral spring by simple frontal pressure of the headers against the base.

[0009] Additionally, and as is conventional, the buckle further incorporates a second spring here placed axially on the base for the obvious purpose of pushing both headers out when they are released by a lateral pressure on the button.

## DESCRIPTION OF THE DRAWINGS

[0010] The characteristics and advantages of the invention will be better understood in view of the accompanying drawings of a preferred embodiment, where for purposes of illustration only the following is shown:

Figure 1.- Shows a perspective exploded view of a safety buckle for child seats and the like in accordance with the object of the present invention.

Figure 2.- Shows a further perspective view of the set shown in figure 1 from the opposite side of its component elements.

Figure 3.- Shows a perspective view of a detail of the button part of the base of the buckle of the previous figures.

Figure 4.- Shows a plan view of the ensemble shown in figure 1, duly assembled and with the base sectioned in order to show clearly the inner structure and particularly the coupling of the headers to the button.

Figure 5.- Shows, finally, a plan sectional view of an enlargement of the base revealing the transverse

guide means for the button.

#### PREFERRED EMBODIMENT OF THE INVENTION

[0011] In view of these figures, it can be seen how the safety buckle of the invention comprises the conventional hollow base (1), in which is defined a housing (2) which is open towards the outside through an opening (3) in which insert sectors (4) and (5), which couple to each other with a matching system, and which belong to respective headers (6) and (7), with base (1) provided in its opposite closed end, opposite opening (3), with a transverse groove (8) which forms a sort of ring for anchoring the corresponding strap, while headers (6) and (7) are in turn provided with similar grooves (9 - 9') for attaching the other two seatbelt straps which must meet at the buckle.

[0012] One of the headers (6), in its sector (4) in which couples second header (7), incorporates a sturdy lug (10) which defines the means for coupling the other header (9) to sector (5), specifically in a housing (11) of the former, so that the suitable superposition of said sectors (4) and (5) forms a rectangular prismatic body which inserts in housing (2) of base (1) through opening (3), where it is impossible to separate sectors (4) and (5).

[0013] In order to attach said rectangular prismatic block (4 - 5) inside housing (2) of base (1), the latter is provided with a button (12) which can be directly accessed through a side opening (13) of the base and can be operated against the opposition of a spring (14) provided opposite opening (13), between button (12) and the corresponding side wall of base (1), as is clearly shown in figure 4, with button (12) suitably guided along its transverse motion by opening (13) on one of its ends and by a guide formed by a wall (15) of base (1) in its opposite end, which moves within a groove (15') of button (12).

[0014] In order to attain the locking of headers (6) and (7), button (12) which is mainly hollow and open on one of its bases, as shown in figure 3, incorporates in its bottom and on its inner face a frontal tooth (16) which is complemented by another lateral tooth (17), so that these teeth are meant to act respectively on corresponding ledges (18) and (19) operatively provided in inserting sector (4) of one of headers (6), specifically ledge (18) being the end sector of a guide (20) or bent groove of sector (4) for access of tooth (16) and ledge (19) defined by a lateral notch (21) of said sector (4), as seen particularly in figure 1.

[0015] Both ledge (18) and ledge (19) are accessed through inclined planes (22) and (23), so that in coupling of headers (6) and (7) to base (1) said inclined planes touch corresponding teeth (16) and (17), forcing button (12) to move transversely against spring (14) until reaching the extreme locking position in which the two teeth surpass said inclined planes and reach locking ledges (18) and (19). This manoeuvre takes place against the action of a second spring (24) which is

placed axially on the button (12), so that when button (12) is later pressed in order to release teeth (16) and (17) from ledges (18) and (19), headers (6) and (7) are automatically pushed outwards.

#### Claims

1. Safety buckle for child seats and the like, of the type comprising a functional arrangement of a base provided with means for attaching one of the straps which partakes in the buckle and provided with a housing for a pair of complementary headers, to which in turn attach the other two straps which complete said buckle, said headers provided with corresponding matching coupling sectors, which together define a rectangular prismatic body which inserts in the base and is secured to it with the aid of means provided in a release button, **characterised in that** said release button (12) incorporates two retaining elements for block (4 - 5) defined by the two headers (6) and (7), with said retaining elements located at a significant distance from each other, and with one of them (16) acting on the front face of said block (4 - 5) and the other (17) on the side face of block (4 - 5).
2. Safety buckle for child seats and the like, as claimed in claim 1, **characterised in that** the retaining elements provided in button (12) are embodied in a front tooth (16) and a side tooth (17) which respectively act on ledges (18) and (19) defined in the interlocking sector (4) of one of the headers (6), with said button (12) aided by a lateral spring (14) against the action of which it can move transversely, whether by manual operation of the button itself or by the incidence of said teeth (16) and (17) on respective inclined planes (22) and (23) provided in the sector (4) of header (6), the first plane in a guide or groove (20) for accessing ledge (18) and the second in the side wall of said sector (4), for accessing a notch (21) in which is provided the corresponding ledge (19).
3. Safety buckle for child seats and the like, as claimed in above claims, **characterised in that** button (12) fits tightly in a lateral opening (13) of base (1), which acts as a guide in its motion against the action of spring (14), while on its opposite end said button (12) incorporates a groove (15') which moves within a partition (15) of base (1) and acts as a complementary guide for said button (12).

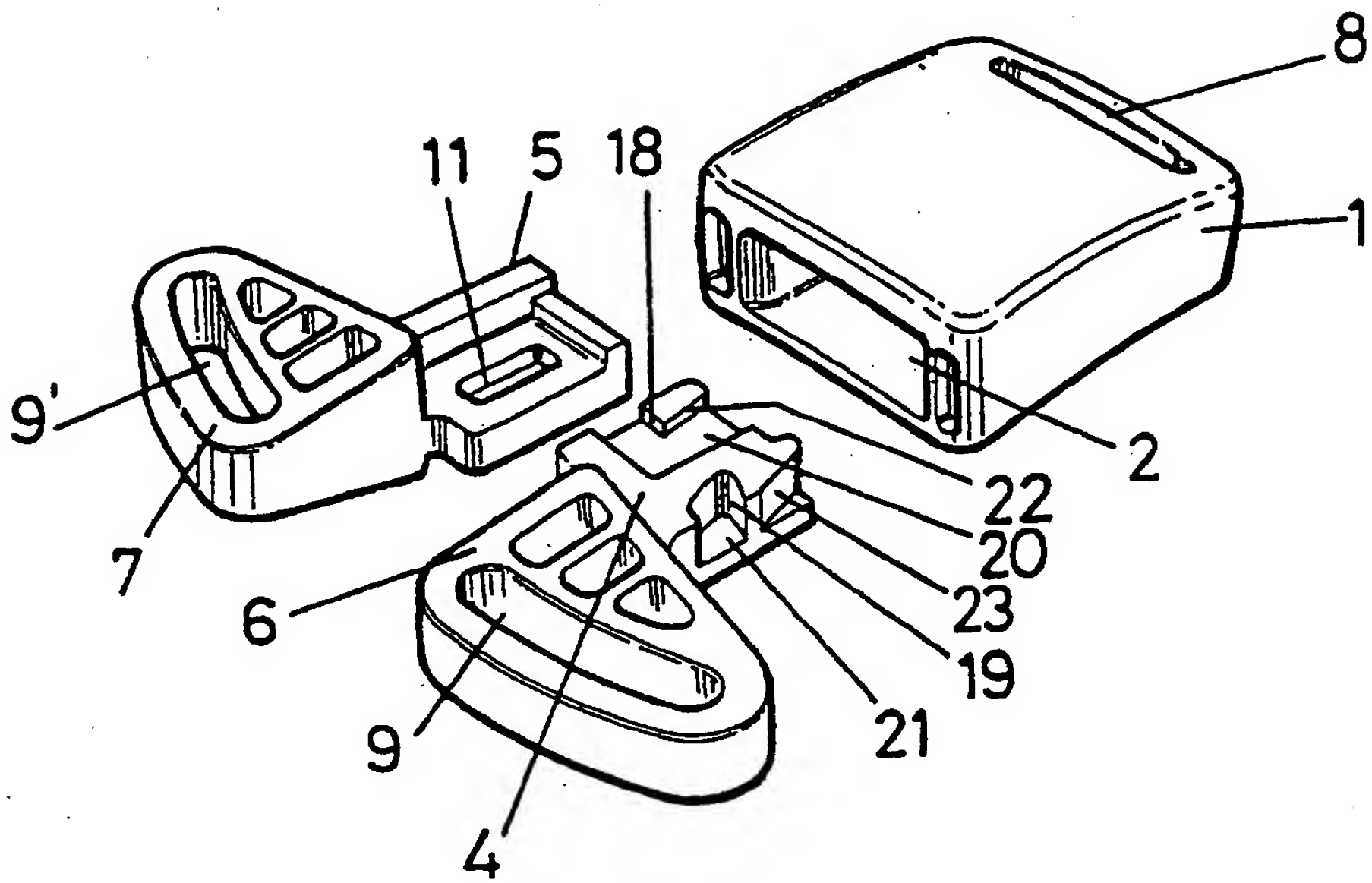


FIG.1

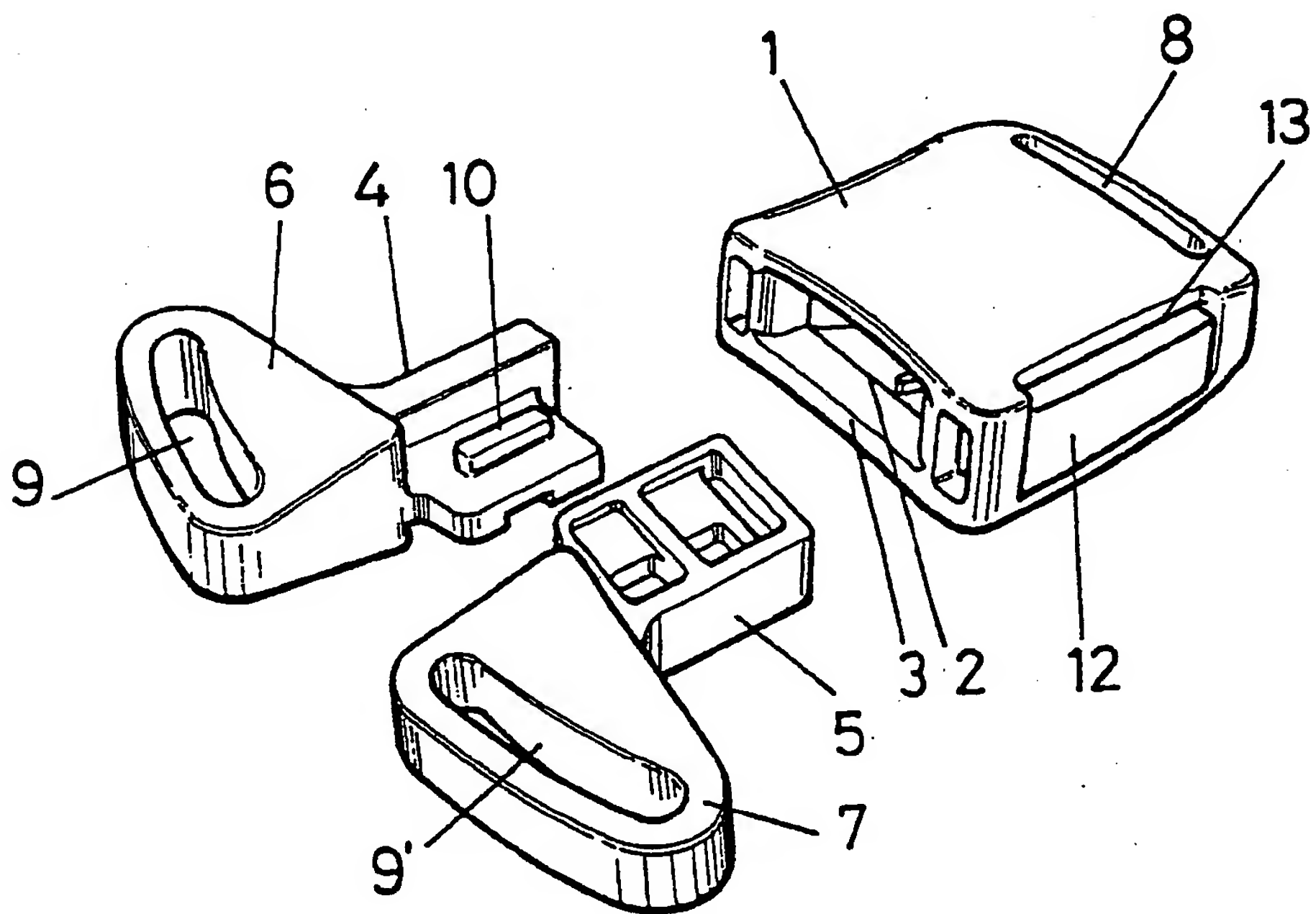


FIG.2

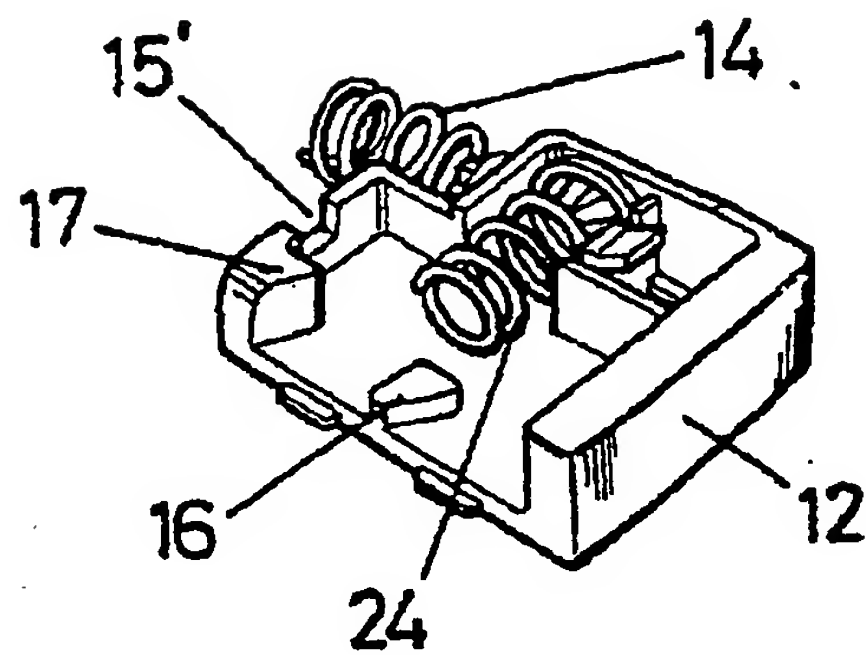


FIG. 3

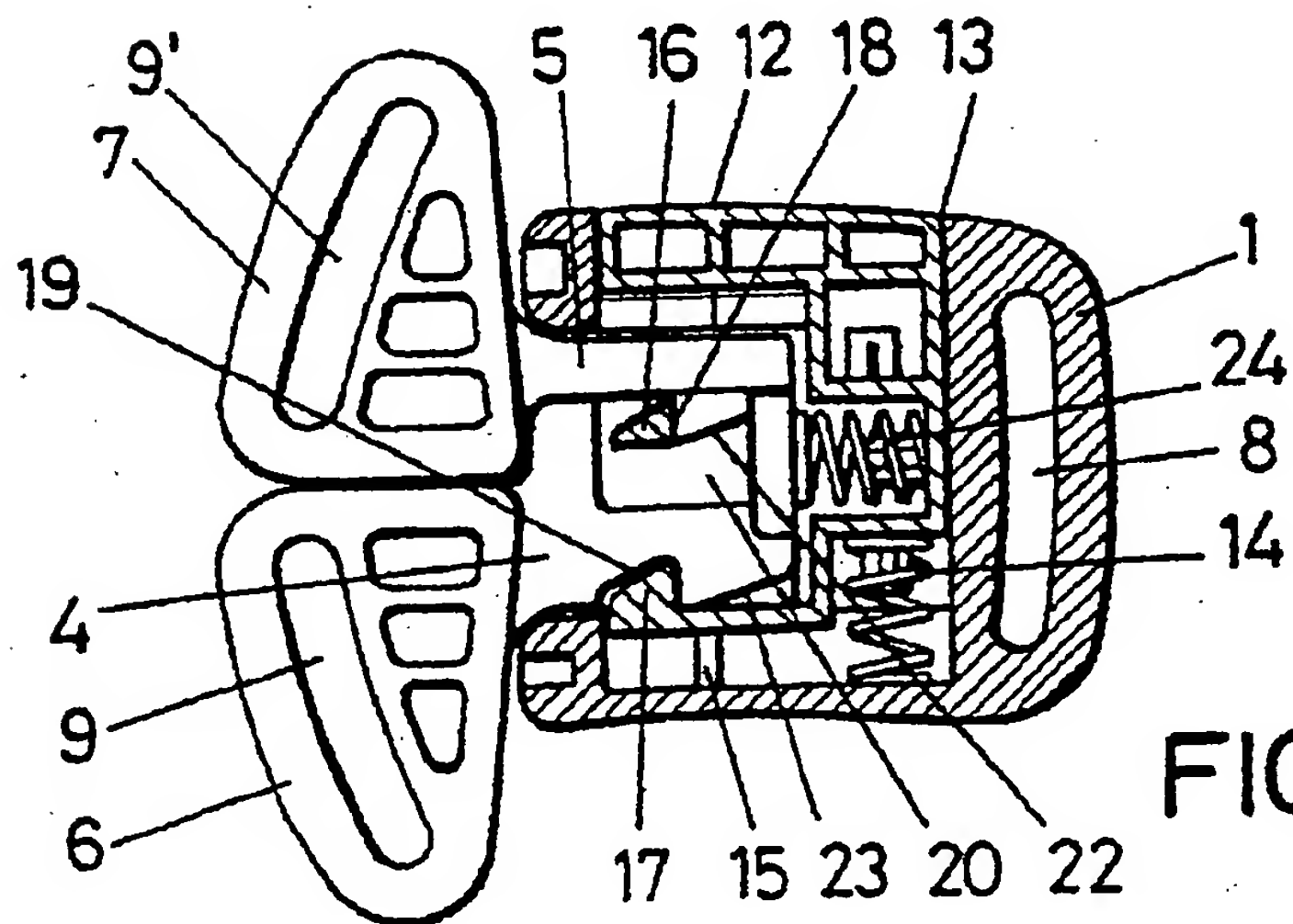


FIG. 4

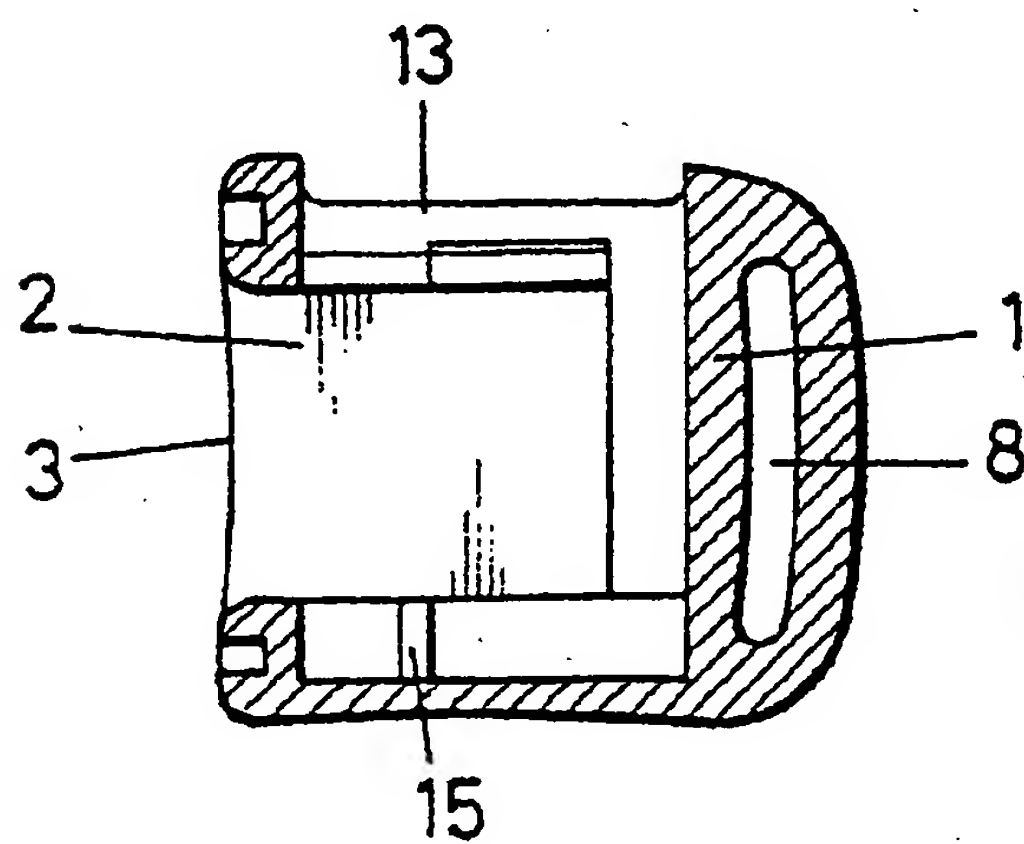


FIG. 5



## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/ES 00/00307A. CLASSIFICATION OF SUBJECT MATTER<sup>6</sup>:

IPC 7: A44B 11/25

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7: A44B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

ES

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CIBEPAT, EPODOC, WPI, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 867131 A1 (ROFIN, S.r.l.) 30 September 1998 (30.09.98), column 2, line 19 - column 4, line 29; figures	1,2
A	ES 2087528 T3 (HOLMBERGS FABRIKS AB) 16 July 1996 (16.07.96), column 2, line 12 - column 4, line 42; figures	1
A	DE 2504263 A1 (KOLB KG) 5 August 1976 (05.08.76), page 2, lines 1-9, page 2, line 16 - page 3, line 18; figure	2
A	EP 608564 A1 (INDIANA MILLS & MANUFACTURING, INC) 3 August 1994 (03.08.94), column 2, line 33 - column 3, line 42 figures 1-3	1



Further documents are listed in the continuation of Box C.



See patent family annex.

## \* Special categories of cited documents:

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Date of the actual completion of the international search  
3 November 2000 (03.11.00)Date of mailing of the international search report  
8 November 2000 (08.11.00)Name and mailing address of the ISA/  
S.P.T.O.

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International Application No

PCT/ES00/00307

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